Clean copy of the allowed claims

1. A method of designing omni-directional, broadband antennas, comprising the following steps:

providing at least one design parameter for a driven antenna structure as input to an algorithmic process, comprising a genetic algorithm;

executing said algorithmic process to determine size and position of parasitic elements for combination with said driven antenna structure to create improved antenna configurations, characterized by a central antenna portion surrounded by a plurality of parasitic elements forming a sleeve configuration; and

identifying selected of said improved antenna configurations as optimum configurations based on a determined fitness value for each improved antenna configuration.

2. A method of designing omni-directional, broadband antennas as in claim 1, wherein said at least one design parameter includes dimensions of wires or of other elements for use in constructing said driven antenna structure.

3. A method of designing omni-directional, broadband antennas as in claim 1, wherein said step of executing said algorithmic process is successively repeated to create different respective populations of improved antenna configurations, and wherein selected of said improved antenna configurations from a given population comprise combinations of at least two of the improved antenna configurations from previously created populations.

4. A method of designing omni-directional broadband antennas as in claim 1, wherein said algorithm process includes calculating voltage standing wave ratios for selected of said antenna configurations over a selected range of frequencies for antenna operation and assigning fitness values to said antenna configurations for which the voltage standing wave ratios are less than some predetermined value.

5. A method of designing omni-directional broadband antennas as in claim 1, further comprising a step of providing an ideal frequency range of operation as input to said algorithmic process.

6. A sleeve monopole antenna as produced by the method of claim 1.

7. A sleeve cage antenna as produced by the method of claim 1.

8. A sleeve helix antenna as produced by the method of claim 1.

9. A method for designing a sleeve antenna structure characterized by omni-directional capabilities over a generally wide frequency range, comprising:

defining initial antenna parameters and providing a corresponding range of potential values for selected of said initial antenna parameters;

executing a first iteration of an algorithmic process, comprising a genetic algorithm to generate a population of individual antenna designs, characterized by a central antenna portion surrounded by a plurality of parasitic elements such that selected individual antenna

designs of said population of individual antenna designs are assigned fitness values that relate to a bandwidth ratio of the highest frequency to lowest frequency within a selected frequency range of operation for which voltage standing wave ratios are less than some predetermined value;

evaluating said population of individual antenna designs and selecting certain of said individual antenna designs as having optimum fitness values; and

executing at least a second iteration of said algorithmic process to generate an additional population of individual antenna designs with corresponding fitness values assigned to selected individual antenna designs of said additional population.

10. A method for designing a sleeve antenna structure as in claim 9, wherein said algorithmic process determines the size and location of parasitic elements for positioning around a driven antenna element, thereby generating improved antenna designs with greater bandwidth efficiency.

11. A method for designing a sleeve antenna configuration as in claim 9, wherein said algorithmic process includes calculating the electric current in selected of said individual antenna designs.

12. (Cancelled).

13. A sleeve antenna as produced by the design method of claim 9.

14. A sleeve antenna as in claim 13, wherein said sleeve antenna comprises one of a sleeve-cage antenna and a sleeve helix antenna.

15. A process for designing and producing antennas, comprising the steps of:

providing a genetic algorithm as a design algorithm;

providing general antenna parameters and a corresponding range of potential values for selected of said general antenna parameters for input to said design algorithm;

specifying the resolution of selected of said general antenna parameters;

performing a first iteration of said design algorithm to generate a population of individual antenna designs, wherein selected of said individual antenna designs are characterized as having a sleeve configuration with a central antenna portion surrounded by a plurality of parasitic element, and wherein each individual antenna of said population of individual antenna designs is assigned a fitness value;

evaluating said fitness values of selected of said individual antenna designs to determine which of said antenna designs are characterized by optimum fitness values;

performing at least a second iteration of said design algorithm to generate an additional population of individual antenna designs, wherein selected of said individual antenna designs are identified as having most optimum fitness values; and

providing an antenna having parameters corresponding to those of a selected individual antenna design identified as having a most optimum fitness value.

16. A process for designing and producing antennas as in claim 15, wherein said general antenna parameters include at least one of frequency range of operation, range of

antenna height, and dimensions of wires or of other elements for potential construction of said antenna configurations.

17. A process designing and producing antennas as in claim 15, wherein said resolution of selected general antenna parameters is specified as a number of bits per parameter.

18. A process for designing and producing antennas as in claim 15, wherein said fitness value relates to a bandwidth ratio of highest frequency to lowest frequency within a selected frequency range of operation for which voltage standing wave ratio is less than some predetermined value.

19. A process for designing and producing antennas as in claim 15, wherein said design algorithm comprises antenna design software for use in conjunction with a computer system.

20. (Cancelled).

21. A process for designing and producing antennas as in claim 15, wherein said central antenna portion comprises one of a cage structure and a helical structure.

22. to 58. (Cancelled).